

WHAT IS CLAIMED IS:

1. A dual chamber cardiac pacemaker, comprising:
  - a first electrode electrically coupled to an atrial chamber;
  - a second electrode electrically coupled to a ventricular chamber;
  - a signal generator to generate a sequential pair of pacing pulses;
  - a first lead coupled to the signal generator and to the first electrode;
  - a second lead coupled to the signal generator and to the second electrode;and
  - a distributor circuit, connected between the first lead and the signal generator and between the second lead and the signal generator, to receive the pair of pacing pulses, distribute a first pacing pulse from the pair at a first amplitude to the first lead, and distribute a second pacing pulse from the pair at a second amplitude to the second lead after a delay period.
2. The dual chamber cardiac pacemaker of claim 1, wherein the signal generator generates a sequential pair of electrical pacing pulses of the same amplitude.
3. The dual chamber cardiac pacemaker of claim 1, further comprising:
  - an atrial circuit, connected to the first electrode, to sense depolarization in the atrial chamber; and
  - a ventricular circuit, connected to the second electrode, to sense depolarization in the ventricular chamber.

4. The dual chamber cardiac pacemaker of claim 3, wherein the signal generator generates the sequential pair of electrical pacing pulses in response to a signal from the atrial circuit.
5. The dual chamber cardiac pacemaker of claim 1, the distributor circuit further comprising:
  - a flip-flop connected between the signal generator and the first lead.
6. The dual chamber cardiac pacemaker of claim 5, the distributor circuit further comprising:
  - an adjustable schmidt trigger connected to the flip-flop and configured to adjust the timing of at least one pulse of the sequential pair of pacing pulses.
7. The dual chamber cardiac pacemaker of claim 5, the distributor circuit further comprising:
  - a zener diode connected to the flip-flop and configured to adjust the amplitude of at least one of the sequential pair of pacing pulses.
8. The dual chamber cardiac pacemaker of claim 5, the distributor circuit further comprising:
  - an adjustable clamping circuit connected to the flip-flop and configured to adjust the amplitude of at least one of the sequential pair of pacing pulses.

9. The dual chamber cardiac pacemaker of claim 1, the distributor circuit further comprising:

a bistable flip-flop connected between the signal generator and the first lead.

10. The dual chamber cardiac pacemaker of claim 1, the distributor circuit further comprising:

a switch to intermittently couple the signal generator to the first and second leads.

11. The dual chamber cardiac pacemaker of claim 10, the distributor circuit further comprising:

a shunt resistor, connected between the switch and the first lead, to provide the first pacing pulse at the first amplitude.

12. The dual chamber cardiac pacemaker of claim 10, the distributor circuit further comprising:

a shunt resistor, connected between the switch and the second lead, to provide the second pacing pulse at the second amplitude.

13. The dual chamber cardiac pacemaker of claim 1, further comprising:

a delay circuit coupled to the distributor circuit to delay at least one of the sequential pair of pacing pulses.

14. The dual chamber cardiac pacemaker of claim 13, wherein the delay circuit comprises at least one inductor.

15. The dual chamber cardiac pacemaker of claim 13, wherein the delay circuit comprises at least one capacitor.

16. The dual chamber cardiac pacemaker of claim 1, the distributor circuit further comprising:

at least one Zener diode configured to distribute the sequential pair of pacing pulses to the first and second leads.

17. A bi-chamber cardiac pacemaker, comprising:
- a first electrode electrically coupled to a left chamber;
  - a second electrode electrically coupled to a right chamber;
  - a signal generator to generate pacing pulses;
  - a lead, coupled to the signal generator and to the first electrode and including a distal end to be coupled to the second electrode;
  - the lead further including a delay element between the first electrode and the second electrode;
  - wherein the delay element prevents the second electrode from receiving a pacing pulse until after a predetermined delay period.
18. The bi-chamber cardiac pacemaker of claim 17, wherein the delay element comprises an inductor.
19. The bi-chamber cardiac pacemaker of claim 17, wherein the delay element comprises a capacitor.

20. A bi-chamber cardiac pacemaker, comprising:
- a first electrode electrically coupled to a left chamber;
  - a second electrode electrically coupled to a right chamber;
  - a signal generator to generate a sequential pair of electrical pacing pulses;
  - a first lead coupled to the signal generator and to the first electrode;
  - a second lead coupled to the signal generator and to the second electrode;
- and
- a distributor circuit, connected between the first lead and the signal generator and between the second lead and the signal generator, to receive the pair of electrical pacing pulses, distribute a first pacing pulse of the pair at a first amplitude to the first lead, and distribute a second pacing pulse of the pair at a second amplitude to the second lead after a delay period.

21. A bi-chamber cardiac pacemaker, comprising:

a first electrode electrically coupled to a left chamber;

a second electrode electrically coupled to a right chamber;

a signal generator to generate at least one electrical pulse;

a first lead coupled to the signal generator and to the first electrode;

a second lead coupled to the signal generator and to the second electrode;

and

a distributor circuit, connected between the first lead and the signal generator and between the second lead and the signal generator, to distribute pacing pulses to the first lead at a first amplitude and to the second lead at a second amplitude in response to the at least one electrical pulse generated by the signal generator.

22. The bi-chamber cardiac pacemaker of claim 21, further comprising:

a delay circuit, connected between the signal generator and the first lead and between the signal generator and the second lead, to prevent the second electrode from receiving the second pacing pulse until after a predetermined delay period.

23. The bi-chamber cardiac pacemaker of claim 21, the second lead further comprising a delay element to prevent the second electrode from receiving the second pacing pulse until after a predetermined delay period.

24. A dual chamber cardiac pacemaker apparatus, comprising:
- first means for electrically coupling the apparatus to an atrial chamber;
  - second means for electrically coupling the apparatus to a ventricular chamber;
  - signal generator means for generating a sequential pair of pacing pulses; and
  - distribution means for distributing a first pacing pulse from the pair at a first amplitude to the first means, and for distributing a second pacing pulse from the pair at a second amplitude to the second means after a delay period.
25. The apparatus of 24, wherein the apparatus further comprises:
- a clamping means for adjusting the amplitude of at least one of the sequential pair of pacing pulses.
26. The apparatus of 24, wherein the distribution means further comprises:
- a switching means for intermittently coupling the signal generator means to the first and second means.
27. The apparatus of 24, wherein the distribution means further comprises:
- a plurality of leads for coupling the signal generator means to the first and second means, respectively.



28. A bi-chamber cardiac pacemaker apparatus, comprising:
- a first means for electrically coupling the apparatus to a left chamber;
  - a second means for electrically coupling the apparatus to a right chamber;
  - a signal generator means for generating pacing pulses;
  - a distribution means for electrically coupling the signal generator means to the first and second means and for delaying at least one of the pacing pulses for a predetermined delay period.
29. The apparatus of 28, wherein the distribution means further comprises:
- a connection means for coupling the signal generator means to the first and second means.
30. The apparatus of 29, wherein the connection means further comprises:
- a delay means for delaying at least one of the pacing pulses.

31. A bi-chamber cardiac pacemaker apparatus, comprising:

- a first means for electrically coupling the apparatus to a left chamber;
- a second means for electrically coupling the apparatus to a right chamber;
- a signal generator means for generating a sequential pair of electrical pacing pulses;
- a distribution means for receiving the pair of electrical pacing pulses from the signal generator means, for distributing a first pacing pulse of the pair at a first amplitude from the signal generator means to the first means, and for distributing a second pacing pulse of the pair at a second amplitude from the signal generator means to the second means after a delay period.

32. A bi-chamber cardiac pacemaker apparatus, comprising:

- a first means for electrically coupling the apparatus to a left chamber;
- a second means for electrically coupling the apparatus to a right chamber;
- a signal generator means for generating at least one electrical pulse; and
- a distribution means for distributing the electrical pacing pulses from the signal generator means to the first means at a first amplitude and to the second means at a second amplitude in response to the at least one electrical pulse generated by the signal generator means.